Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Motorola, Inc.	)	
Request for Waiver of the IEEE-1394	)	CSR-8251-Z
Output Requirement	)	
	)	
TiVo Inc.	)	
Request for Waiver of the IEEE-1394	)	CSR-8252-Z
Output Requirement	)	
	)	
Implementation of Section 304 of the	)	
Telecommunications Act of 1996;	)	CS Docket No. 97-80
Commercial Availability of Navigation Devices	)	

TEXAS INSTRUMENTS REPLY COMMENTS

Texas Instruments Incorporated ("Texas Instruments") submits these reply comments in response to comments filed in support of the requests by Motorola, Inc. ("Motorola") and TiVo Inc. ("TiVo") for waivers of the Commission's IEEE-1394 interface requirement.[1] In its Opposition, Texas Instruments urged the Commission to consider any possible change to the set-top box network port requirement together with a rulemaking to examine set-top box functionality. Texas Instruments argued that the Commission should require the cable MSOs to enable the bi-directional functionality of IEEE-1394 ports, benefitting both users of the large installed base of set-top boxes with IEEE-1394 ports and new users. Then consumers would be able to access program guide data necessary to support advanced recording from a retail-purchased device, allowing consumers to control how they record and view content. Texas Instruments also argued that use of the waiver process to undo a Commission rule adopted

[1] Motorola, Inc. Request for Waiver of 47 C.F.R. § 76.640(b)(4) ("Motorola Petition"); Petition of TiVo Inc. for Clarification or Waiver of 47 C.F.R. § 76.640(b)(4) ("TiVo Petition").

through notice and comment rulemaking would be inappropriate. Texas Instruments in this Reply addresses the arguments of Intel, Verizon, and RCN in support of the waiver requests of Motorola and TiVo.

Commenters argue that IEEE-1394 is expensive. In fact, IEEE-1394 is a low-cost solution. Some customers of Texas Instruments add IEEE-1394 capabilities to their HD set-top boxes for less than one dollar per set-top box. In other implementations, additional capabilities and encryption have been offloaded from the CPU/SOC chipsets into the IEEE-1394 interface at a cost of less than three dollars per set-top box – while enabling the set-top box CPU/SOC chip to use slower, cheaper CPU subsystems because of the offloaded functionality. The cost of IEEE-1394 continues to decline because of competition and innovation resulting from the Commission's HDMI/DVI and IEEE-1394 requirements. Grants of waivers to Motorola and TiVo are likely to fragment the market and reduce innovation and competition, ultimately harming the consumer and increasing costs.[2]

IEEE-1394 is also a technologically advanced solution – certainly more advanced than Ethernet, which was developed prior to IEEE-1394. Ethernet was designed for file transfer using personal computers, where processing power is plentiful. IEEE-1394 was designed from the ground-up to be a cost-effective solution for video streaming. IEEE-1394 is fast, a true peer-to-peer network, has an efficient architecture, provides guaranteed quality-of-service, and protects

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[2] In addition, the cost to the consumer is not solely in the set-top box, but also in the peripheral devices which connect to the set-top box. IEEE-1394's true peer-to-peer network capability enables smaller, cheaper CPU/processor devices when moving data between devices. Indeed, IEEE-1394 can totally eliminate the need for a CPU/processor in some peripheral devices in certain implementations. For Ethernet, both the set-top box and the peripheral device require expensive CPU/processor devices. Also, IEEE-1394 topology enables a daisy-chaining architecture, whereas Ethernet topology uses a separate router/splitter to connect multiple devices. In the case of three or more devices connected into the topology, a separate Ethernet router/splitter would need to be added, or integrated into the set-top box, adding cost and complexity to the Ethernet network solution.

content. Therefore, RCN's claims that IEEE-1394 has been replaced by "newer and more efficient technologies," that the TiVo device includes "more advanced networking connections" than IEEE-1394, and that "technology has moved beyond" IEEE-1394 are puzzling.[3]

Intel's comments suggest that the Commission faces a choice between IP-based networking devices and IEEE-1394.[4] IEEE-1394 *is* IP-compatible. For clarification, both IEEE-1394 and Ethernet are network standards in which data can be transmitted. IP is a type of data packet, formatted in a specific manner. Ethernet networks only transfer IP packets, whereas IEEE-1394 can transfer IP packets, bulk data, or true isochronous data. If Intel believes that IP-based networking is the solution, IEEE-1394 can be used for IP-based networking.

The Commission should not rescind a duly promulgated Commission rule by the granting of waivers, either incrementally on a manufacturer-by-manufacturer basis or, as Verizon requests, by "broadly eliminating the 1394 requirement."[5] The Commission has repeatedly observed that the waiver process is an inappropriate means of changing or rescinding a Commission rule.[6]

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[3] Comments of RCN filed February 22, 2010, at 2-3.

[4] Comments of Intel on TiVo Waiver Request filed February 22, 2010, at 1-2; Comments of Intel on Motorola Waiver Request filed February 22, 2010, at 1-2.

[5] Comments of Verizon filed February 22, 2010, at 1.

[6] *See, e.g.*, *Threshold Fair Distribution Analysis of 26 Groups of Mutually Exclusive Applications for Permits to Construct New or Modified Noncommercial Educational FM Stations Filed in October 2007 Window*, Memorandum Opinion & Order, 23 FCC Rcd. 17983, 17986-17987 (Media Bur. 2008) (denying waiver request where applicant failed to show unique circumstances and concluding that the "proposal would be better considered in the context of notice and comment rulemaking procedures"); *Rechannelization of the 17.7-19.7 GHz Frequency Band for Fixed Microwave Services under Part 101 of the Commission's Rules*, Notice of Proposed Rulemaking, 19 FCC Rcd. 7260, 7267 (2004) (denying waiver request where applicant failed to show unique circumstances and observing that the "proper mechanism" for a rule change "is through a notice and comment rulemaking proceeding and not through a decision to grant a blanket waiver"); *Schlumberger Technology*

Verizon suggests that ending the IEEE-1394 output standard by granting a universal waiver would result in a level playing field.[7] However, some set-top box and semiconductor manufacturers have integrated IEEE-1394 into their chip sets, just as Intel has chosen to integrate Ethernet. If the Commission grants any waiver (whether universally or only to those which have sought a waiver), manufacturers that have invested to comply with the Commission's rules via chip set integration will be the losers, and manufacturers with a business plan that does not comport with the Commission's existing rules will be the winners.

Texas Instruments respectfully urges the Commission to deny the requests by Motorola and TiVo for waivers of Section 76.640(b)(4) of the Commission's rules and, as part of its examination of video device innovation to spur broadband adoption and deployment, to consider video device equipment standards and output port functionality requirements comprehensively. There will be real innovation if the cable MSOs enable bi-directional functionality. Texas Instruments would be very interested in engaging with the Commission on the best approach to networking for enhancing the consumer experience.

Respectfully submitted,

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Corp., Order, 14 FCC Rcd. 2988, 2990 (Wireless Bur. 1999) (concluding that "accommodation of . . . industry trends regarding use and needs . . is a matter more appropriately handled in the context of a rule making proceeding rather than by a waiver").

[7] *Id.* at 4.